



Anatomy

EFFECT OF MOBILE PHONES ON NORMAL LIFESTYLE AND HEALTH OF STUDENTS

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ABSTRACT

Background: Mobile phones have now become an integral part of life. It is essential in many fields for various purposes. Mobile phones serve us with countless perks like a music player, games, internet, video camera, calculator, alarm clock and many more. Due to these endless benefits, the total mobile subscription has increased to 7.9 billion. But every coin has two sides. Similarly, mobile phones have a negative side too. It has now become an addiction. Constant usage and addiction to cell phones have affected people physically, psychologically, and socially. The present study was done on 480 medical students who have been using mobile phones for more than a year. 23 questions were asked of the participants through a Google form, and feedback was recorded. Only a small proportion about 8% reported using their mobile phones primarily for academic purposes. This study will help in providing knowledge for the prevention of mobile-related problems and methods to reduce the usage of mobile phones by diverting to other activities. The outcome of this study will help to enhance the quality-of-life parameters of medical students.

Keywords: Mobile, Medical students, Addiction

INTRODUCTION

Mobile phones have now become a part and parcel of life. It is essential in many fields for various purposes. Mobile phones serve us with countless perks like music player, games, internet, video camera, calculator, alarm clock and many other perceived benefits as increased accessibility and social connectivity, reduced loneliness, and security in emergency situations [1]. The feature of online payment has helped to connect people financially across the globe. It is wonderful how a small hand-held device has taken over the job of several devices. Mobile phones have also benefited the economy of our country. New factories and new shops have created more employment opportunities.

With the availability of low-cost internet plans, mobile phones have become a social norm as well as an important tool of e-governance. The increased surge in the need for a mobile phone has led to the foundation and success of various new brands, enhancing choice and economy. Due to these endless benefits, the total mobile subscription has increased to 7.9 billion in Q1 2019. 44 million new subscriptions were added just during the first quarter of 2019. LTE subscriptions hit 3.7 billion, with 160 million new subscriptions in the same quarter [2].

Let's have a look at Indian numbers. More than 500 million people were active members of Facebook in 2011, which has now increased to 2.27 billion monthly active users in 2018 [3]. In India, WhatsApp subscribers

in August 2013 were about 20 million, which skyrocketed to 200 million in February 2017 [4]. Internet users in India were estimated to be around 566 million as of December 2018. It is predicted that the number of internet users may increase to around 627 million by the end of 2019 [5].

But every coin has two sides. Similarly, mobile phones have a negative side too. It has now become an addiction. Constant usage and addiction to cell phones have affected people physically, psychologically, and socially [6].

Some of the reported health issues associated with mobile phone usage are as vision problem, impaired concentration, headache, dizziness, brain cancer risk, sleep disorders, neck and back pain, increased stress level and lethargy [6-17].

Inappropriate use of mobile phone by students presents many detrimental effects, such as, usage of phones during lectures causes disturbances in classrooms affecting students' academic performances [18], accidents while driving [19], damaged relationships owing to preference to phone calls by ignoring other members [20], and increased freedom from parents [14] along with decreased social freedom [21]. Mobile phone radiations also affect human health in many harmful ways as well as our surrounding environment [11,15].

In the current study, we have evaluated mobile phone usage and its association with health issues in medical undergraduates. The present study is aim to find out the association between mobile phone use and its effects on the lifestyle and health of students and objectives were as follows: To find out the adverse effects of mobile use in students, to assess the amount of time students spend using their phones, to assess the variety of habits of mobile phone usage and to assess the purposes for which the mobile is primarily used.



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MATERIALS AND METHODS

Study design: It was a survey-based cross-sectional study

Study group: Undergraduate medical students in medical colleges in Gujarat

Sampling method: Convenience sampling

Inclusion Criteria: Students who were using mobile phones regularly for more than one year were included in the study.

Exclusion Criteria: Non-willing medical students.

Sample size: 480 medical students [based on convenience sampling method]

Study Period: 2019 to 2021 at Zydus Medical College & Hospital, Dahod, Gujarat

Methodology:

The current study was conducted to examine mobile phones usage pattern and associated physical or behavioural effects among the participants. A pre validated structured questionnaire was used to collect data that covering basic demographics information like age, sex, and BMI, along with details related to use of mobile phones and attributed health concern they've experienced.

The questionnaire also incorporated items about vision problems, back or neck discomfort from using a phone, headaches followed prolong screen time, and presence of irritable or lost their temper issues. For each, participants answered a binary response "Yes" or "No." Information was obtained regarding how long they use their phones each day as categorized as less than an hour, 1–3 hours, 3–5 hours, or more than 5 hours and further to know about the longest single stretch, classified as less than an hour, 1–2 hours, 2–3 hours, or more than 3 hours at a time.

To establish the behaviour tendencies associated with phone usage, enquired about the purpose of using their phones most, including streaming videos, listening to music, gaming, browsing social networks, or something else. The daily usage of mobile data, split into less than 500 MB, 500 MB to 1 GB, 1–3 GB, or over 3 GB and tracked how often they checked for new notifications, with options ranging from every 30 minutes to every 2 hours or more. Further to know how participants reacted to certain mobile-related situations. Did they panic when the battery ran low? Feel frustrated with bad internet? Check their phone first thing in the morning? The time they spent outside without their phones, in new places, did they prefer to socialize or just use their phones?

To explore little deeper, asked how many games they'd installed [1, 2, 3, or more than 3] and whether issues like unsupported apps bothered. Patterns they kept their phones while sleeping and if they minded being interrupted while using their phone. We also asked if mobile phone use affected their academic work or other educational activities. Finally, participants whether they considered carrying a phone was essential whenever they left the house.

RESULTS

In the present study titled "Effect of mobile phones on normal lifestyle and health of students", 480 partici-

pants were included. The sample population consisted of 255 male students and 225 female students, their sex, weight and BMI categorization as below [Table 1, 2 and Fig 1]. Data was compiled, organised in an Excel sheet and analysed using SPSS [version 16] software.

Table 1: Age and gender distribution of participants

Partici- pants	Age in years [%]				Total
	18 Yrs	19 Yrs	20 Yrs	>21 Yrs	
Female	86 [17.9]	105 [21.9]	28 [5.8]	6 [1.3]	225 [46.9]
Male	122 [25.4]	78 [16.3]	38 [7.9]	17 [3.5]	255 [53.1]

Table 2: Weight categorization of participants

Partici- pants	Weight categorization in %				Total
	Under- weight	Normal	Over- weight	Obese	
Female	4.8 %	30.8	8.5	2.7	46.9
Male	3.8	37.9	6.9	4.6	53.1
Total	8.5	68.8	15.4	7.3	100

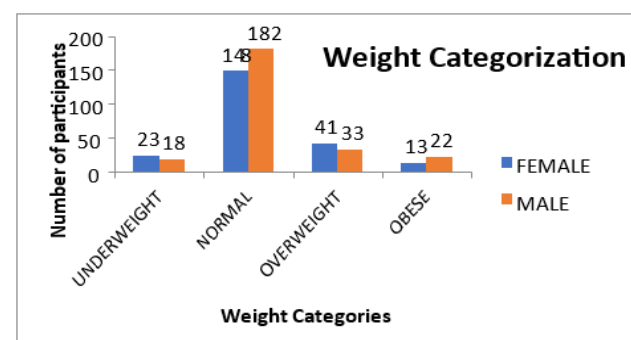


Figure 1: Weight categorisation of participants

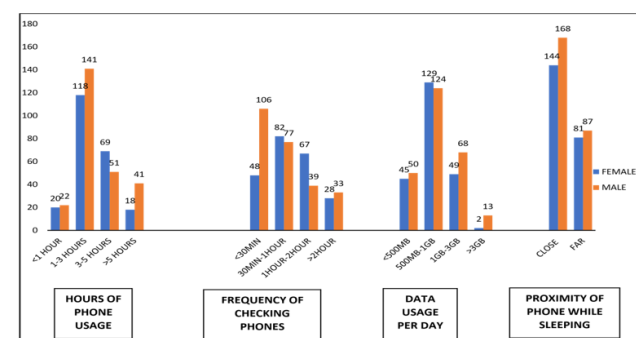


Figure 2: Mobile phone usage habits

Around 54% students used mobile phones for 1 to 3 hours per day. One third of students used a mobile for more than three hours. In general, there was no significant difference in the time spent on mobile phones by male and female students. But, in the case of more than 5 hours of usage, there was a significant [$p = 0.007$] difference between male and female students. Significantly more male

students used mobile phones for more than 5 hours [Fig 2].

Interestingly, male students had a highly significant [$p > 0.001$] frequency of checking their mobile phones. 42% of male students showed the habit of checking mobile phones in less than 30 minutes, whereas only 21% female students did the same thing.

In general, gender-wise, there was no significant difference in the data usage by medical students, except in the case of more than 3 GB per day usage. The majority of the students had a habit of keeping their mobile phones close while sleeping.

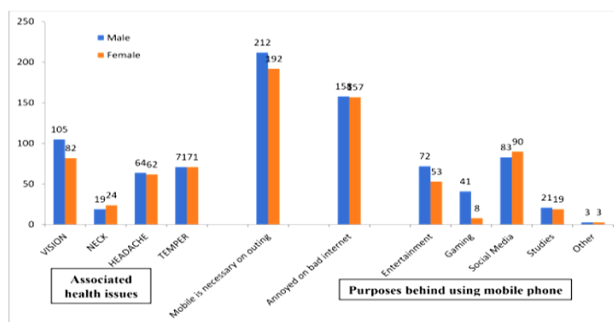


Figure 3: Associated health issues, necessity of mobile network and phone

Table 3: Health issues associated with mobile phone use

Participants	Associated Health Issues				Total
	vision	neck	headache	temper	
Female	21.9 %	4.0 %	13.3 %	14.8 %	46.9%
Male	17.1 %	5.0 %	12.9 %	14.8 %	53.1%
Total	39.0 %	9.0 %	26.3 %	29.6 %	100%

The most common health issue observed in students [39%] using mobile phones was visual disorders. Short-temperedness was reported in 29.6% students. Headache was also a common finding [26.3%] [Table 3 & Fig 3].

Around 84% students felt that a mobile was a necessity on outings. Almost 2/3rd of students used to get annoyed when the internet connection was bad.

36% students admitted that social media was their prime purpose behind using a mobile phone. Entertainment was the primary purpose for 26% students. Around 10% students primarily used a mobile phone for gaming. Interestingly, around 8% students had purchased phones basically for study purposes.

DISCUSSION

Mobile phones have certain deteriorating effects on the health of medical students. Increased mobile usage has compromised the time students used to play outdoors. This leads to a sedentary lifestyle in students.

In the present study, 15.4% students were found to be overweight, while 7.3% students were obese. This prevalence was in agreement with some other studies conducted on medical undergraduates in India. The study revealed overall a high prevalence of overweight [44%] and obesity [10%]. In a study, Nair et al [2014] observed that 35% of male students were overweight and

11% were obese, while 49% female students were overweight and 9% were obese. Another study conducted by Mehta et al [2016] at Medical College in Bhavnagar showed that the prevalence of obesity was 11.53% in the study population [23]. Gudegowda et al [2018] concluded that the prevalence of overweight and obesity was 14.6% and 11.3% in a South Indian Medical College.

Due to the new features and developing technology, the mobile phone has become an indispensable gadget. Hence, the average number of active hours of mobile phone usage has increased. Concurrently, the incidence of vision disorders has increased significantly. Long-term use of phones may be one of the causes of vision-related disorders. In our study 47% of females and 32% males suffered from vision-related problems.

Long hours of mobile usage induce headaches. This causes irritation and tiredness, thus decreasing the working efficiency of many students. Increased eye strain of eyes can lead to headaches. 28% of females and 24% of males suffered from headaches due to mobile phone usage.

The postural problems may also be caused due to mobile phones. There might be an occurrence of neck and back pains due to staying in one position for a long time. Musculoskeletal disorders are very commonly found in high mobile usage. 41 males [8.4%] used mobile phones for more than five hours, while only 18 females [3.8%] used mobile for more than five hours. But there was no significant association between mobile phone use for more than 5 hours and complaint of neck pain [$p = 0.71$]. On the contrary, musculoskeletal pain was also observed in students who had moderate usage of phone.

Males have been found to check their mobiles more frequently compared to females. Most of the students check their mobiles for less than an hour. This may lead to reduced concentration and focus. Medical students will hardly afford to lose concentration.

The usage of data is an essential parameter for checking mobile usage. The data consumption per day has increased significantly in recent months. The males are found to be consuming more internet data as compared to females. The overall increase in internet consumption has been due to increased fascination towards the various services the internet provides, for example, web series, social networking, gaming, etc.

Almost 65% of the students have been found to be keeping their respective mobiles close to them while sleeping. This leads to continuous exposure to electromagnetic radiation. These may have many detrimental effects. Also, when the phone is not on silent mode, this leads to disturbance in sleep if any notification or call comes.

Sleep disturbances due to mobile phone use have been studied quite extensively. Sahin et al [2013] observed that the sleep quality worsens with increasing mobile phone addiction level [$p < 0.05$]. Boumosleh [2017] concluded that 35.9% felt tired during the daytime due to late-night smartphone use, 38.1% acknowledged decreased sleep quality, and 35.8% slept less than four hours due to smartphone use more than once. In a similar study conducted by Murugan et al [2018], 34.6% reported changes in sleeping patterns and 43.5% in sleeping hours. Due to increased smartphone usage, most of the time of students

is spent in isolation. This leads to decreased temperament. Social skills of person are lost on spending a lot of time in isolation. Various psychological changes due to excessive mobile use have been documented. Pundir et al [2016] observed that amongst the college students using mobile phones, psychological distress was present in 5.8%. Lower self-esteem was found in 13.2% of the participants. The mean score of the General Health Questionnaire [GHQ] among problematic mobile phone users was 10.14 ± 4.87 , whereas the score among normal users was 7.85 ± 3.42 .

Demirci et al [2015] observed that depression, anxiety, and daytime dysfunction scores were higher in the high smartphone use group than in the low smartphone use group. Positive correlations were found between the Smartphone Addiction Scale scores and depression levels, anxiety levels, and some sleep quality scores.

In the present study, the majority of participants [84%] admitted that mobile is a necessity while they are on an outing. There are various reasons why it is essential. It makes a trip easier as it may help us to reach our location by usage of maps. Online payments are handier and safer. It helps keep in touch with people while going to a remote place. It makes it easier to book travel tickets, hotels. Even the weather forecast can be known in advance, due to mobile, to make the journey safer. But there are negative effects too. It can lead to decreased interactions with new people. The upcoming 'selfie' culture has changed the attributes of psychological health.

Males and females may use mobile phones for different reasons. A noticeable difference was found in gaming as a priority. The gaming purpose has increased recently due to new and highly engaging games present in the market. Remarkably lesser number of students used mobile phones for studies.

Recently, 'gaming disorder' has been added to the ICD-11 classification of diseases. Addiction of technology is a serious health issue today. 'Withdrawal' of mobile phone leads to significant levels of anxiety and distress, especially in children. The mobile phone dependency has led to the occurrence of 'nomophobia'.

'Nomophobia' is a psychological condition where people have a fear of being detached from mobile phone connectivity for some reason, such as the absence of a signal or running out of minutes or battery power.

New Time Mobility Poll, in 2012, reported that 84% people couldn't go a single day without their mobile devices. It is now known that mobile phone addiction and withdrawal from the mobile network may increase anger, tension, depression, irritability, and restlessness, which may change the physiological behaviour and deteriorate work efficacy. To tackle these technology-associated mental health problems, the National Institute of Mental Health and Neuroscience's [NIMHANS] centre for wellbeing in Bangalore opened the SHUT clinic [Service for Healthy Use of Technology]. They have also launched an application known as "Digital Detox".

CONCLUSIONS

In this study, the analysis showed several notable pat-

terns in mobile phone use among students. majority students reported using their mobile phones for 1-5 hours in a day and female students' habit of checking their devices for updates less than an hour, with male students showing a significantly higher tendency to check their phones within 30 minutes.

The majority used less than 1 GB of internet data per day and kept their phones close while sleeping. The most common health issues associated with mobile uses are vision-related [39%] health issue followed by irritability or temper issues [29%] and headaches [26.3%]. Nearly 84% of students felt that carrying a mobile phone was essential during outings, and 70% students became annoyed when the internet connection was poor.

Social media usage as the most primary purpose [36%], while gaming was significantly higher among male students. Only a small proportion of participants [8%] reported that primarily for academic purposes.

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